

NOTE ON THE EYES OF DEEP SEA FISHES.

BY R. VON LENDENFELD, PH.D.

In a short note which I published some time ago (1), concerning the life history of the New Zealand Frost fish, *Lepidopus caudatus*, I mentioned the fact, that *Lepidopus caudatus* had very large eyes, and deduced from this, that it was a Deep Sea Fish.

Referring to this note, Mr. Arthur (2) points out that large eyes cannot be a criterion of deep sea fish, because many deep sea fishes have small eyes, or no eyes at all. There is no doubt that numerous deep sea animals have lost their eyes in the same manner as the blind mole, but at the same time I would like to point out that very large eyes are certainly a proof that the animal which possesses them lives in a dark place in the case of this animal, being marine, in deep water.

The progeny of an ordinary surface fish, which may have quitted the shallow water and taken up its abode in the dark abyss could not have migrated to a greater depth very quickly, but must necessarily have been many generations doing it.

If the eyes of the fish originally were good and the migration was effected very slowly, there is no doubt, that the species may have adapted itself in the ordinary manner to the slowly changing amount of light, by its eyes becoming continually enlarged. On the other hand if the eyes of a species originally were not very good and the migration was a rapid one, there was not sufficient time for adaptation, and the eyes were of less use the deeper the species migrated, so that they finally became rudimentary, because they were useless.

(1) *R. v. Lendenfeld*. Ueber *Lepidopus caudatus*. Zoologischer Anzeiger. Band VII. Seite 1883. Translated into English. New Zealand Science Journal. Vol. II., p. 108.

(2) *Arthur*. Notes on the occurrence of the Frost Fish. New Zealand, Journal of Science. Vol. II., p. 157.

For the hypothesis concerning the appearance of *Lepidopus candatus* set forth in my paper, I do of course not claim anything more than the merit of a *possibility*; and I will be very well satisfied if I have thereby induced any one to take up the subject and discover the secret, whether his discovery prove my hypothesis to be correct or false.

THE INSECTS OF THE MACLAY-COAST, NEW GUINEA.

BY WILLIAM MACLEAY, F.L.S., &c.

During a nearly three years residence at Astrolabe Bay on the North Coast of New Guinea, about 10 years ago, Baron Maclay picked up, as occasion offered, a few insects, which he placed in spirits, where they have remained undisturbed and unexamined until the present time. The collection is of the scantiest nature, the number of species of all Orders of the Insecta, not exceeding 50, and many of them I regret to find, from their lengthened immersion in spirits, in anything but a good state for examination.

It must not however, be supposed that the smallness of the collection in any way indicates poverty of the insect fauna in that portion of New Guinea, the reason is simply that the Baron at that time was so deeply interested in Anthropological investigations, that he scarcely noticed the other animals of the country, and only collected what actually came in his way. It is much to be regretted that he did not make better use of his opportunities in this respect, for the Maclay Coast—so named after the distinguished traveller himself—is about the only portion of the coast line which has never been visited by collectors.

Port Dorey, Triton Bay, and indeed many places on the West and North-west Coast, have been frequently visited by naturalists, and many species of the Invertebrata of these regions were described